

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

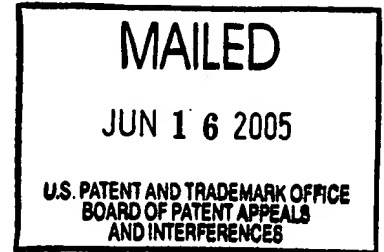
## UNITED STATES PATENT AND TRADEMARK OFFICE

### BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Ex parte ROBERT P. BENJEY

Appeal No. 2005-0880  
Application No. 09/963,815

HEARD: June 8, 2005



Before FRANKFORT, MCQUADE, and NASE, Administrative Patent Judges.  
MCQUADE, Administrative Patent Judge.

#### DECISION ON APPEAL

Robert P. Benjey appeals from the final rejection of claims 1 through 11, all of the claims pending in the application.

#### THE INVENTION

The invention relates to "systems for providing controlled venting and preventing escape to the atmosphere of fuel vapor from a fuel tank, particularly on board a motor vehicle, and more particularly during refueling" (specification, page 2).

Representative claim 1 reads as follows:

1. A method of controlling fuel tank vapor venting during refueling comprising:

(a) providing a fuel filler neck on the tank and inserting a fuel filler nozzle in the tank filler neck and mechanically sealing between the nozzle and filler neck;

(b) disposing a vent valve in the upper wall of the tank and connecting a vapor vent line from the vent valve to a vapor storage canister; and,

(c) connecting one end of a recirculation line to the filler neck downstream of the mechanical seal and connecting an end opposite the one end to the vapor vent line; and, forming a liquid seal between the filler neck and the fuel discharged from the nozzle during refueling and entraining recirculated vapor into the tank.<sup>1</sup>

#### THE PRIOR ART

The prior art items relied on by the examiner to support the final rejection are:

Allison

5,282,497

Feb. 1, 1994

The prior art fuel tank system shown and described in Figure 5 of the drawings and on pages 3 and 4 in the specification of the instant application (the admitted prior art).

#### THE REJECTION

Claims 1 through 11 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the admitted prior art in view of Allison.

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<sup>1</sup>The appellant's counsel confirmed at the oral hearing that the step in claim 1 of "forming a liquid seal between the filler neck and the fuel discharged from the nozzle during refueling" is not entirely accurate. Claims 4 and 8 contain similar limitations. The underlying specification (see page 6) more accurately describes the liquid seal as being formed between the nozzle and the inner periphery of the neck, and we have so construed the claim language in question for purposes of the appeal. In the event of further prosecution, the appellant should amend claims 1, 4 and 8 to conform with the descriptive portion of the specification in this regard.

Attention is directed to the main and reply briefs (filed March 11, 2004 and June 7, 2004) and the final rejection and answer (mailed July 16, 2003 and May 27, 2004) for the respective positions of the appellant and examiner regarding the merits of this rejection.

#### DISCUSSION

Since the appellant has not argued separately the patentability of any particular claim apart from the others, all of the appealed claims shall stand or fall with representative claim 1 (see In re Young, 927 F.2d 588, 590, 18 USPQ2d 1089, 1091 (Fed. Cir. 1991); In re Wood, 582 F.2d 638, 642, 199 USPQ 137, 140 (CCPA 1978)).

The following passage from the appellant's specification describes the admitted prior art fuel tank system:

Referring to FIG. 5, another system of the prior art is illustrated pictorially where a fuel tank 1a has a filler tube 4a with an enlarged cup-shaped upper end portion 5a shown with refueling nozzle 3a received therein and having the end thereof inserted in closely fitting arrangement in the upper end of the filler tube 4a. The lower end of the filler tube 4a extends into the fuel tank and has a one-way valve 6a provided thereon to permit fuel to enter the tank but not filler neck 4a. The tank has a float operated vent valve 7a provided in the top thereof and registered thereagainst by flange 8a with the valve 7a extending through an access opening into the tank for sensing the fuel level indicated generally at 14a.

Valve 7a has conduit 9a connected thereto and to storage canister 10a which is vented through the atmospheric air inlet tube 12a. Canister 10a has a purge line 11a connected thereto and adapted for connection to the air (not shown) of the vehicle engine. Tube 9a is also connected through conduit 13a to the enlarged upper end 5a of the filler neck for recirculating fuel vapor thereto. During filling, the aspirating effects of the liquid fuel flow from the nozzle creates a reduced pressure in the upper end of the tube 5a and draws in air and vapor from 13a into the filler tube 4a and the tank. The air drawn in further increases fuel vaporization. Flow of fuel vapor to the atmosphere through tube 13a can occur if 13a vapor flow is not significantly limited [pages 3 and 4].

The examiner's determination (see page 2 in the final rejection) that the admitted prior art teaches, or would have suggested, a method responsive to all of the limitations in claim 1 except for those pertaining to the mechanical seal between the nozzle and filler neck is reasonable on its face and has not been disputed by the appellant. To overcome this deficiency in the admitted prior art, the examiner turns to Allison.

Allison relates to "motor vehicle fuel filling systems and, more particularly, to a fuel and vapor control system for controlling the release of evaporative and running loss fuel vapors into the atmosphere" (column 1, lines 7 through 11). The control system 200 illustrated in Figures 7 and 8 comprises a

fuel tank 12, a fuel tank fill pipe 14, a control valve assembly 204 at the upper portion of the fuel tank, a vapor line 32 connecting the control valve assembly to a vapor recovery device 206, a nozzle signal line 24 connecting the control valve assembly to a port 99 near the outer end of the fill pipe, and a cap-less restrictor assembly 202 within the fill pipe just upstream of the port for inhibiting release to the atmosphere of fuel vapors in the fill pipe and nozzle signal line. The control valve assembly functions to control the flow of fuel vapors from a vapor dome above the fuel in the tank to the vapor line and the nozzle signal line. As the fuel level in the tank approaches the fill line, the fuel vapors pick up and carry liquid fuel through the nozzle signal line and the resulting "spray" signals the nozzle shut-off mechanism to terminate the delivery of fuel into the fill pipe.

Of particular interest in this appeal is the construction of Allison's cap-less restrictor assembly 202. As shown in Figure 8, this assembly includes a spring-biased back-splash door assembly 82, 84, 86, 88 and 90, and a wall member 210 supporting an elastomeric annular nozzle seal 212, a pressure relief valve

assembly 102 and a vacuum relief valve (not shown). Allison teaches that

elastomeric nozzle seal 212 . . . is adapted to resiliently and sealingly engage the exterior periphery of nozzle "N" upon insertion therethrough prior to engagement with back splash door 82. Once nozzle "N" is inserted through nozzle opening 88, the rushing liquid fuel dispensed therefrom creates a vacuum behind nozzle seal 212 in chamber 89. As such, the vacuum relief valve assembly permits air to be drawn into chamber 89 from exterior chamber 92 during the refueling process while preventing the escape of vapors therefrom [column 8, lines 48 through 58].

In proposing to modify the admitted prior art in view of Allison to reject claim 1, the examiner submits that it would have been obvious at the time the invention was made to a person having ordinary skill in the art

to employ in the fill cup 5a of instant figure 5 of the application [the admitted prior art] a support plate having mounted thereon a seal element for supporting and sealing the fuel filler nozzle . . . for the purpose of sealing the open end of the fill neck 202 [sic, filler tube 4a] and nozzle "N" [sic, refueling nozzle 3a] thus precluding straight venting of fuel vapor to the atmosphere as recognized by Allison [final rejection, pages 2 and 3].

The appellant counters that this rejection is unsound due to a lack of any suggestion or basis for the proposed combination of the admitted prior art and Allison (see page 3 in the main brief), and more specifically because

[t]he purpose of the liquid seal in Applicant's structure in combination with the mechanical seal is to prevent or minimize the entrainment of air into the filler tube during refueling. If air is entrained into the filler tube, the air pushes the vapor into the canister line and this places a load on the canister. Applicant's device prevents entrainment of air and minimizes the loading of the canister during refueling.

The Examiner's proposed combination of the prior art of FIG. 5 of the present application with the structure of FIG. 8 of Allison would still permit air to be drawn into the filler tube through the vacuum relief valve 102 [sic] of Allison.

The Examiner's rejection is predicated upon reworking the structure of the Allison '497 patent to remove the vacuum relief valve 102 [sic] and prevent the entrainment of air. This reworking would teach away from or contravene the purpose of the Allison structure. Accordingly, it is submitted that the Examiner's proposed combination, being predicated upon reworking the reference in a manner teaching away from the reference is arbitrary and not within the statutory meaning of "obvious" [reply brief, pages 1 and 2].

The appellant's position here is not persuasive. The description of the admitted art in the instant specification allows that "[f]low of fuel vapor to the atmosphere through tube 13a can occur if 13a vapor flow is not significantly limited" (page 4). In other words, fuel vapor recirculated through tube 13a to the upper end 5a of filler tube 4a may escape to the atmosphere, a problem which is self-evident given the construction of the admitted prior art system. The cap-less restrictor assembly 202 disclosed by Allison is expressly designed to solve such a problem. The appreciation of the fuel

vapor venting problem in the admitted prior art and the teaching by Allison of a solution thereto would have provided the artisan with ample suggestion or motivation to incorporate a cap-less restrictor assembly of the sort disclosed by Allison into the admitted prior art system. This modification would involve the addition to the admitted prior art system of a mechanical seal, such as Allison's wall member 210 and elastomeric annular nozzle seal 212, between the nozzle and filler neck upstream of the vapor recirculation line, thereby arriving at the method recited in claim 1. That the proposed modification of the admitted prior art system in view of Allison also would have included the addition of a vacuum relief valve which permits entrainment of air into the filler tube during refueling is of no moment as neither claim 1 nor any other appealed claim excludes such a relief valve or the entrainment of air permitted thereby.

Hence, on the record before us, the combined teachings of the admitted prior art and Allison justify the examiner's conclusion that the differences between the subject matter recited in claim 1 and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art.



Accordingly, we shall sustain the standing 35 U.S.C.  
§ 103(a) rejection of claim 1, and claims 2 through 11 which  
stand or fall therewith, as being unpatentable over the admitted  
prior art in view of Allison.

SUMMARY

The decision of the examiner to reject claims 1 through 11  
is affirmed.

AFFIRMED

BOARD OF PATENT  
APPEALS  
AND  
INTERFERENCES

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